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Report

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Summary :

By coincidence the elastic texture of Farinex VA 85 T was discovered, during dairy trials. Because of this and Avebe's goal to have a good gelatin replacer, Farinex VA 85T was tried in confectionery recipes in combination with a fast gelling starch (Perfectamyl Gel NF).
Combinations of these two starches results in clear and rather elastic products, when dried at 50°C. It is possible to produce a wine-gum with a elastic texture and a good clarity without using any gelatin .

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Preface.

In the confectionery industry a lot of gelatin is used. As well in moulded products (wine-gums and fruitgums) as in aereted products (marsh-mallows, angel kisses). For the confectionery industry Avebe is focused on gelatin replacement in the moulded confectionery products. For this purpose starches are wanted with an elastic texture. Up till now we can make use of gelling starches (retrogradation of amylose) or stable starches with a long texture but without gelling properties.

During trials for the dairy cluster, Farinex VA 85T showed a very elastic character. This was the reason why Farinex VA 85T was also tried in recipes for the moulded confectionery.

Procedure.

a. Equipment.

A continuous cooking line of Vomatec is used during this research-program.

b. Processing.

1. A premix is made of a recipe containing : sugar/glucose-sirup/starch/water.
2. This premix is cooked at 130°C
3. The cooked solution is evaporated.
4. Color/flavor and citric acid is added to the cooked solution.
5. This final solution is moulded into shapes.
6. This shapes are dried at two different temp. (20° and 50°C).

c. Research-program:

1. Determination of the usage level of Farinex VA 85T
2. Determination of the optimal elastic component.
3. Determination of the optimal gelling starch, which has to be used in combination with the elastic component (Farinex VA 85T itself is not gelling).

d. Ingredients :

Sugar	- Kristalsuiker, Suikerunie Breda
Glucose-sirup	- Dormamix 42/82, Pfeifer & Langen
Starches	- Farinex VA 85T, Stadex
	- Perfectamyl Gel NF, Avebe
	- Perfectamyl Gel MB, Avebe
	- Perfectamyl Gel, Avebe

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Research-program.

1. Determination of the usage level of Farinex VA 85T.

Recipes	I	II	III	IV
Farinex VA 85T	0	2	4	6
Perfectamyl Gel NF	12	10	8	6
Sugar	34	34	34	34
Glucose-sirup DE 42	34	34	34	34
Water	20	20	20	20
Procesconditions				
Cooking temp.	130	130	130	130
Moulding brix	71	72	72	not possible
Moulding viscosity	OK	OK	high	not possible

Assessment :

Products dried at 20°C.

I - Short texture, bad clarity, firm.
II - Less short, bad clarty, firm.
III - See II, moulding viscosity is too high.
IV - Not possible to mould.

Products dried at 50°C.

I - Short texture, good clarity, firm.
II - Elastic texture; good clarty, firm.
III - Moulding viscosity is too high.
IV - Not possible to mould.

As an additional trial recipe V is carried out based on 3 % Farinex VA 40 and 9% Perfectamyl Gel NF. The products based on this recipe are more elastic then recipe II and the moulding viscosity is at the upper limit. For the next trials this recipe will be the reference.

2. Determination of the optimal elastic component.

Recipes	VI	VII	VIII	IX	X
Farinex VA 85T	3	--	--	--	--
Farinex VA 50T	--	3	--	--	--
Farinex VA 60T	--	--	3	--	--
Farinex VA 70T	--	--	--	3	--
Farinex VA 100T	--	--	--	--	3
Perfectamyl Gel NF	9	9	9	9	9
Sugar	34	34	34	34	34
Glucose-sirup DE 42	34	34	34	34	34
Water	20	20	20	20	20

[redacted]

Procesconditions

Cooking temp.	130	130	130	130	130
Moulding brix	71	72	72	72	72
Moulding viscosity	high	OK	OK	OK	OK

Assessment :

Products dried at 50°C.

VI - Elastic texture, good clarity, firm product.
VII - Rather elastic, good clarity, viscosity too high
VIII - See VI, possible to mould
IX - Elastic, good clarity, possible to mould
X - Less elastic, les clear, softer then the rest

3. Determination of the optimal gelling starch, which has to be used in combination with the elastic component (Farinex VA 85T itself is not gelling).

Recipes	XI	XII	XIII
Farinex VA 85T	3	3	3
Perfectamyl Gel NF	9	--	--
Perfectamyl Gel MB	--	9	--
Perfectamyl Gel	--	--	9
Sugar	34	34	34
Glucose-sirup DE 42	34	34	34
Water	20	20	20

Procesconditions

Cooking temp.	130	130	130
Moulding brix	72	70	74
Moulding viscosity	OK	high	OK

Assessment :

Products dried at 50°C.

XI - Elastic texture, good clarity, firm product.
XII - Moulding viscosity is high, products are a little shorter
VIII - Moulding viscosity is ok, products are softer, very clear.

Conclusion :

After all these trials it can be concluded that a recipe based on Farinex VA 85T and Perfectamyl Gel NF in a ratio 25/75 result in a moulded confectionery product with a good clarity and an elastic texture (in comparison with the traditional starches of Avebe). This combination should be used in a 12% dosage maximum to avoid moulding problems. The final products should be dried for 24 hours at 50°C.

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